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10/577,355

04/28/2006

Hiroyuki Ikeuchi

51204

5141

1609 7590 06/12/2009

ROYLANCE, ABRAMS, BERDO & GOODMAN, L.L.P.  
1300 19TH STREET, N.W.  
SUITE 600  
WASHINGTON,, DC 20036

EXAMINER

SASTRI, SATYA B

ART UNIT

PAPER NUMBER

1796

MAIL DATE

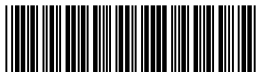
DELIVERY MODE

06/12/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b><i>Application Number</i></b>  	<b>Application/Control No.</b>  10/577,355	<b>Applicant(s)/Patent Under Reexamination</b>  IKEUCHI ET AL.
	<b>Examiner</b>  SATYA B. SASTRI	<b>Art Unit</b>  1796

### **DETAILED ACTION**

1. This office action is in response to amendment filed on 3/19/09. Claims 1-16, 18-22 are now pending in the application.

2. As noted in paragraph 2 of the prior office action, applicants are requested to file a certified copy of JP 2003-377898 application as required by 35 U.S.C. 119(b).

### ***Previously Cited Statutes***

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-16, 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wada et al. (US 6127454).

The discussion with regard to Wada et al. in paragraphs 7, 8, 10 of the office action dated 12/22/08 is incorporated herein by reference.

In summary, Wada et al. disclose water absorbent resins based on crosslinked hydrophilic polyacrylic acid salts (col. 5, lines 10-25, col. 6, lines 1-24). Additionally, the surface crosslinking may be accomplished by polyols, and disclosed polyols include polyglycerol, pentaerythritol, sorbitol etc. which have 4 or more hydroxyl groups (col. 8-9, bridging paragraph). Furthermore, polyvalent metal compounds such as aluminum and zirconium may

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also be used for surface crosslinking (col. 9, lines 25-31). The surface crosslinking agents may be used in amounts of 0.001 to 10 parts by wt. of solid content of the resin (col. 9, lines 40-45).

The prior art fails to disclose (a) compositions comprising surface crosslinked resin and one or more tetra-functional polyol and (b) compositions comprising surface crosslinked particles of size of 850 to 150 $\mu$  accounting for not less than 90% by wt. of the entire resin particles as presently claimed.

The prior art discloses a genus of surface crosslinking agents, including tetra- or more functional polyol such as pentaerythritol and sorbitol. Thus, it would have been obvious to one of ordinary skill in the art to include any of the surface crosslinking agents and thereby arrive at the present invention. Additionally, the prior art discloses that the surface crosslinking agents may be used in amounts of 0.001 to 10 parts by wt. of solid content of the resin (col. 9, lines 40-45). While the prior art discloses heat treatment to occur in the temperature range of 60 to 230°C, the prior art does not disclose the extent to which the surface crosslinking linking agent reacts, i.e. the prior art does not disclose that the reaction proceeds to 100% completion and that all of the surface crosslinking agent present on the surface is consumed. Given that the instant invention claims as little as 0.01% of the polyol on the particle surface (i.e. in the lower limit of polyol content instant claim 8), it is the examiner's position that residual unreacted polyol surface crosslinking agent in Wada et al. would meet the limitation of claim 8, absent evidence to the fact that all of the polyol agent has chemically reacted on the surface of Wada et al. composition. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons herewith." In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

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Furthermore, the prior art does not explicitly disclose or implicitly suggest a change in particle diameter upon surface crosslinking, thus one skilled in the art would assume the particle diameter to remain substantially in the range of 200 to 600  $\mu\text{m}$  (col. 6, lines 54-61), absent evidence to the contrary.

5. Claims 1-16, 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP2002-539281A.

The discussion with regard to JP2002-539281A, (i.e. Mertens et al.) in paragraph 9 of the office action dated 12/22/08 is incorporated herein reference.

In summary, Mertens et al. disclose powdered water absorbent polymer product constituted of 55-99% by wt. of polymerized acid group containing monomers and 0.1-5% by wt. of polymerized crosslinking monomers, 0.01-5% by wt. of at least one polyol as surface crosslinking agent and 0.001 to 1-1.0% by wt. cation containing surface crosslinking agent (col. 3, lines 30-54). Further, the disclosed polyols include pentaerythritol and sugar alcohols such as sorbitol (col. 4, lines 26-31) and the disclosed cation containing surface crosslinking agent include aluminum salts, zirconium salts and other transition metal salts (col. 4, lines 54-64).

The prior art fails to disclose (a) compositions comprising surface crosslinked resin and one or more tetra-functional polyol and (b) compositions comprising surface crosslinked particles of size of 850 to 150 $\mu$  accounting for not less than 90% by wt. of the entire resin particles as presently claimed.

The prior art discloses a genus of surface crosslinking agents, including tetra- or more functional polyol such as pentaerythritol and sorbitol. Thus, it would have been obvious to one of

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ordinary skill in the art to include any of the surface crosslinking agents and thereby arrive at the present invention. Additionally, the prior art discloses that the surface crosslinking agents may be used in amounts of 0.01-5% by wt. parts by wt. of solid content of the resin. While the prior art discloses heat treatment to occur at temperatures greater than or equal to 150°C, the prior art does not disclose the extent to which the surface crosslinking linking agent reacts, i.e. the prior art does not disclose that the reaction proceeds to 100% completion and that all of the surface crosslinking agent present on the surface is consumed. Given that the instant invention claims as little as 0.01% of the polyol on the particle surface (i.e. in the lower limit of polyol content instant claim 8), it is the examiner's position that residual unreacted polyol surface crosslinking agent in Wada et al. would meet the limitation of claim 8, absent evidence to the fact that all of the polyol agent has chemically reacted on the surface of Wada et al. composition. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons herewith." In re Brown, 459 F.2d 531, 535, 173 USPQ 685, 688 (CCPA 1972).

Furthermore, given that prior art does not explicitly disclose or implicitly suggest a change in particle diameter upon surface crosslinking and given that the disclosed processes include drying the resins, milling and subsequently screening of crosslinked resin particles, one skilled in the art would assume the particle diameter to be substantially unaffected and also largely uniform with at least 90% of the particle size particle diameter in the range of 150-850  $\mu\text{m}$ , absent evidence to the contrary.

***Response to Arguments***

6. In view of the amendment, rejection of claims 1, 3-5, 18 under 35 U.S.C. 112, second paragraph as being indefinite is withdrawn. Additionally, applicant's arguments with regard to the prior art of record have been fully considered but are not found persuasive.

Applicants argue that the prior art to Wada et al. and Mertens et al. disclose a particle size before surface-crosslinking reaction and that the surface crosslinking step results in coagulation of the particles. Examiner notes that the conclusory statement is not supported by any data or evidence. While the prior art does not disclose the particle size of the resin after the surface crosslinking step, the prior art does not teach or suggest that the particle size changes as a result of surface crosslinking.

Additionally, given that applicant's invention requires only a trace amount of unreacted polyol on the surface, it is the examiner's position that residual amounts of polyol may remain in incompletely surface crosslinked resins of Wada et al. or Mertens et al. that do not disclose the extent of surface crosslinking reaction.

Applicants are requested to provide evidence (a) with regard to the change in particle size due to surface crosslinking reaction and/or (b) with regard to residual unreacted polyol content, i.e. under the heat treatment conditions disclosed by the prior art for surface crosslinking, the polyol content in the prior art resins is less than 0.01% by wt., based on the total wt. of the resin.

***Conclusion***

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7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satya Sastri at (571) 272 1112. The examiner can be reached on Mondays, Thursdays and Fridays, 7AM-5.30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. David Wu can be reached on 571-272-1114.

The fax phone number for the organization where this application or proceeding is assigned is (571) 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished



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/Satya B Sastri/

Examiner, Art Unit 1796

/David Wu/

Supervisory Patent Examiner, Art Unit 1796

<b><i>Index of Claims</i></b>  	<b>Application/Control No.</b>  10577355	<b>Applicant(s)/Patent Under Reexamination</b>  IKEUCHI ET AL.
	<b>Examiner</b>  SATYA B SASTRI	<b>Art Unit</b>  1796

✓	<b>Rejected</b>	-	<b>Cancelled</b>	N	<b>Non-Elected</b>	A	<b>Appeal</b>
=	<b>Allowed</b>	÷	<b>Restricted</b>	I	<b>Interference</b>	O	<b>Objected</b>

☐ Claims renumbered in the same order as presented by applicant
 ☐ CPA
 ☐ T.D.
 ☐ R.1.47

CLAIM		DATE									
Final	Original	12/18/2008	06/07/2009								
	1	✓	✓								
	2	✓	✓								
	3	✓	✓								
	4	✓	✓								
	5	✓	✓								
	6	✓	✓								
	7	✓	✓								
	8	✓	✓								
	9	✓	✓								
	10	✓	✓								
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	15	✓	✓								
	16	✓	✓								
	17	✓	-								
	18	✓	✓								
	19	✓	✓								
	20	✓	✓								
	21	✓	✓								
	22	✓	✓								